Claims

1.   A method of processing a digitally coded image in which picture elements are each represented by a colour value, comprising, for each of a plurality of said picture elements:

(a) performing a plurality of comparisons, each comparison comprising comparing a first picture element group which comprises the picture element under consideration and at least one further picture element in the vicinity thereof with a second picture element group which comprises a base picture element and at least one further picture element, the number of picture elements in the second group being the same as the number of picture elements in the first group and the position of the or each further element of the second group relative to the base picture element of the second group being the same as the position of the or a respective further element of the first group relative to the picture element under consideration, wherein each comparison determines whether the two groups match in the sense that they meet a criterion of similarity; and

(b) when at least one comparison results in a match, computing a replacement colour value for the picture element under consideration, the replacement colour value being a function of the colour value for the base picture element of the or each second group for which a match was obtained.

2.   A method according to claim 1 including identifying picture elements which meet a criterion of distinctiveness, and computing a replacement colour value only for picture elements not meeting the distinctiveness criterion.

3.   A method according to claim 2 wherein the step of identifying picture elements which meet a criterion of distinctiveness is performed in advance, and said comparisons are performed only for picture elements not meeting the distinctiveness criterion.

4.   A method according to claim 2 wherein the criterion of distinctiveness for a picture element is that the number of matches obtained for that picture element exceeds a threshold.

5.   A method according to any one of the preceding claims wherein the selection of the or each further picture element of the first group is selected in a random or pseudo-random manner.

6.   A method according to any one of the claims 1 to 4 wherein the selection of the or each further picture element of the first group is selected in a random or pseudo-random manner from picture elements lying within a predetermined distance of the element under consideration.

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7.   A method according to any one of the preceding claims wherein the further elements are selected afresh following a match.

5   8.   A method according to any one of the preceding claims wherein the selection of the base picture element of the second group is selected in a random or pseudo-random manner.

9.   A method according to any one of claims 1 to 7 wherein the selection of the base picture element of the second group is selected in a random or pseudo-random manner from picture
10   elements lying within a predetermined distance of the element under consideration.

10.   A method according to any one of the preceding claims wherein the base picture element for the second group is selected afresh for each comparison.

15   11.   A method according to any one of the preceding claims wherein the image is a monochrome image and the colour value is a single, luminance component.

12.   A method according to any one of the claims 1 to 10 wherein the image is a colour image and the colour value has three components.
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13.   A method according to claim 11 or 12 wherein the match criterion is that no component of any picture element of the first group differs from the corresponding component of the spatially corresponding element of the second group by more than a threshold amount.

25   14.   A method according to any one of the preceding claims wherein the replacement colour value for a pixel is a function also of its existing colour value.

15.   A method according to claim 14 wherein the replacement colour value is the average of the colour value for the picture element under consideration and the colour value for the
30   base picture element of the or each second group for which a match was obtained.

16.   A method according to claim 14 wherein the replacement colour value is that one of a predetermined set of colour values which is closest to the average of the colour value for the picture element under consideration and the colour value for the base picture element of the or each
35   second group for a match was obtained.

17.   A method according to any one of the preceding claims including the step of processing the processed image again using the method of claim 1.

5   18.   A method according to any one of the preceding claims including the step of applying spatial filtering to the processed image.

19.   A method according to any one of the preceding claims including the step of encoding the processed image using a compression algorithm.

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20.   An image processing apparatus comprising means (603) for storing an image and means (2, 602) arranged in operation to perform the steps of any one of the preceding claims.

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21.   A computer program comprising a data carrier having stored thereon a set of instructions for performing the method of any one of claims 1 to 19.